

**DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING and COMPLIANCE DIVISION
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(MPDES)**

Statement of Basis

Permittee:	City of Livingston
Permit No.:	MT0028118
Receiving Water:	Fleshman Creek
Facility Information:	
Name	City of Livingston Swimming Pool
Location	214 River Drive
Facility Contact:	Ed Miller, Parks Foreman 214 River Drive Livingston, MT 59047 406-222-6436
Fee Information:	
Number of Outfalls	1
Outfall – Type	001-Minor POTW

I. Permit Status

The previous MPDES permit was issued on January 23, 1997, became effective on March 1, 1997 and expired on January 31, 2002. Short Form 2A application was received on June 9, 2001. The Department administratively extended the permit on September 27, 2002. The Department requested additional information on April 4, 2007 which was received on April 24, 2007

II. Facility Information

A. Facility Description

The City of Livingston maintains a public swimming pool in Sacajawea Park that is open during the summer months of June, July and August. The pool usually closes the third week of August. The pool is a 226,000 gallon open air facility originally constructed in 1948. Since 1948 pool water was circulated through a series of sand filters before it was discharged to Fleshman Creek. In 2000, the City installed a new Sta-Rite System 3 Modular Media Filter system. The new filtration system is a series of six cartridge filters that remove debris and sediment from swimming pool water. The advantage of this filtration system is that the system is not backwashed to clean the filters; filters are removed from individual filter canisters and cleaned in a mild acidic solution in containers at the maintenance building. This filtration system also reduces the frequency of discharges to Fleshman Creek. With the new filtration system, the only discharge to Fleshman Creek is once each year for two to three days after the pool is closed for the season.

The design flow of the filtration system is rated at 550 gallons per minute (gpm) but the operator stated that the discharge rate is always less than 125 gpm (based on a phone conversation with Ed Miller on April 20, 2007). The application states the design flow of the treatment facility is 0.864 million gallons per day (mgd) or 600 gpm. Pool water is allowed to remain in the pool until the total residual chlorine (TRC) effluent limit (0.35 mg/L) is achieved before it is discharged to Fleshman Creek.

B. Effluent Characteristics

Table 2 summarizes monthly self-monitoring effluent data reported by the City of Livingston Swimming Pool during the period of record (POR) June 2002 through July 2007.

Table 2: Effluent Characteristics⁽¹⁾ for the Period June 2002 through July 2007.							
Parameter	Location	Units	Previous Permit Limit	Minimum Value	Maximum Value	Average Value	Number of Samples
Flow	Effluent	gpm	142	0	140	102	8
pH	Effluent	s.u.	6.0-9.0	7.0	7.6	--	9
Chlorine, Total Residual	Effluent	mg/L	0.35	0	0.35	0.18	10
Turbidity	Effluent	NTU	100 ⁽¹⁾	0	13	7.6	10
Turbidity	Upstream	NTU	--	0	13	10	10
Footnotes:							
(1) Turbidity of the backwash discharge shall not exceed the turbidity of Fleshman Creek by more than 100 Nephleometric turbidity units (NTUs).							

Table 3 summarizes the intermittent discharge flow data for the period from June 2002 through July 2007.

Table 3: Summary of Discharge Flow Data in gpm from June 2002 through July 2007						
Month	2002	2003	2004	2005	2006	2007
	30-day Average	30-day Average	30-day Average	30-day Average	30-day Average	30-day Average
January	--	--	--	--	--	--
February	--	--	--	--	--	--
March	--	--	--	--	--	--
April	--	--	--	--	--	--
May	--	--	--	--	--	--
June	--	--	--	140	--	--
July	--	140	--	--	--	--
August	140	140	40	140	75	--
September	--	--	--	--	--	--
October	--	--	--	--	--	--
November	--	--	--	--	--	--
December	--	--	--	--	--	--
Maximum	140	140	40	140	75	--
Minimum	140	140	40	140	75	--

Based on an August 23, 2005 MPDES inspection report, the facility received a violation letter from the Department for three non compliance items: 1) the

suction pump isolation valve and filter isolation valves were leaking and draining into the sump which discharged to Fleshman Creek; 2) the chorine test kit sample vials were old and scratched which may interfere with test results; and, 3) groundwater was seeping into the sub-surface pump room from between the concrete slab and wall joint. A December 13, 2005 letter from the City stated these violations were being addressed and would be corrected before the next swimming season. A follow-up inspection to confirm this has not been made.

III. Technology-based Effluent Limits (TBELs)

A. Scope and Authority

The Montana Board of Environmental Review (BER) has adopted performance standards for point source discharges to state waters, under Title 17, Chapter 30, Subchapter 12. The Board has adopted by reference 40 CFR Subpart N which is a series of federal agency rules that adopt TBELs for existing sources and performance standards for new sources [Administrative Rules of Montana (ARM) 17.30.1207(1)]. National Effluent Limit Guidelines (ELG) have not been promulgated under Subchapter N for wastewater from swimming pools.

In addition to Subchapter 12, the BER has adopted general treatment requirements that establish the degree of wastewater treatment required to maintain and restore the quality of state surface waters. This rule states that in addition to federal ELGs, the degree of wastewater treatment is based on the surface water quality standards; the state's nondegradation policy; the quality and flow of the receiving water; the quantity and quality of sewage, industrial wastes and other wastes to be treated; and the presence or absence of other sources of pollution on the watershed [ARM 17.30.635(1)].

B. Nondegradation

The provisions of ARM 17.30.701, *et seq.* (Nondegradation of Water Quality) apply to new or increased sources of pollution [ARM 17.30.702(18)]. Sources that are in compliance with the conditions of their permit and do not exceed the limits established in the permit, or as determined from a permit previously issued by the Department, are not considered new or increased sources. Nondegradation rules require nondegradation to be addressed by applying load limits on an annual basis for certain permitted effluent parameters. The pollutants of concern in the effluent from the Livingston municipal swimming pool are pH, turbidity and TRC. Load limits are not applicable to these parameters.

IV. Water Quality-based Effluent Limits (WQBEL)

A. Scope and Authority

Permits are required to include WQBEL when technology-based effluent limits are not adequate to protect state water quality standards (40 CFR 122.44 and ARM 17.30.1344). ARM 17.30.637(2) states that no wastes may be discharged that can reasonably be expected to violate any state water quality standards. Montana water quality standards (ARM 17.30.601 et seq.) define both water use classifications for all state waters and numeric and narrative standards that protect those designated uses.

B. Receiving Water

Wastewater is discharged from the swimming pool to Fleshman Creek, which is a tributary to the Yellowstone River. Fleshman Creek actually flows into the Upper Arm of Lake Sacajawea and Lake Sacajawea, which are created by a small dam west of the public swimming pool. Since there is little flow in Fleshman Creek additional water from the Yellowstone River is pumped into the lake and creek system at a river intake box and 30-inch canal gate that controls the flow in the Upper Arm of Lake Sacajawea and Lake Sacajawea. At the east end of Lake Sacajawea, water flowing over the small dam flows into a culvert before it surfaces east of the swimming pool to continue Fleshman Creek. The swimming pool discharge (Outfall 001) is located at the east end of the culvert (see Figure 1).

The receiving water is classified as B-1 according to Montana Water Use Classifications [ARM 17.30.611(1)(a)]. Waters classified B-1 are to be maintained suitable for drinking, culinary, and food processing purposes, after conventional treatment; bathing, swimming and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply. Degradation which will impact established beneficial uses will not be allowed.

Fleshman Creek is located within the Upper Yellowstone watershed and identified as United States Geological Service (USGS) Hydrological Unit Code (HUC) 10070002. Fleshman Creek is not listed on the 1996 or 2006 303(d) list of impaired streams.

In 2004, the Joe Brooks Chapter of Trout Unlimited and the National Parks Service River and Trails Program, in cooperation with the City of Livingston, completed the Fleshman Creek Enhancement project on the lower reaches of Fleshman Creek from South "M" Street to approximately South "Q" Street. The purpose of the project was to create meanders in the stream and enhance trout habitat. As part of the project the City has legally preserved in-stream flow rights for Fleshman Creek. To ensure fish survival, the City will maintain minimum flows in the creek at approximately 17-28.5 cubic feet per second (cfs) [November 21, 2003 letter to Mrs. Molly Semenik, President - Joe Brooks Chapter of Trout Unlimited from Steve Golnar, Livingston City Manager]. Maintaining minimum stream flows is accomplished, as described above, by

pumping Yellowstone River water into the system at the Yellowstone River intake box and 30-inch canal gate. Therefore, the 7Q10 for Fleshman Creek is 17 cfs or 11 million gallons per day (mgd).

C. Applicable Water Quality Standards

Discharges to surface waters classified B-1 are subject to the specific water quality standards of ARM 17.30.623 (March 2006), Department Circular DEQ-7 (February 2006), as well as the general provision of ARM 17.30.635 through 637. In addition to these standards, dischargers are also subject to ARM 17.30 Subchapter 5 (Mixing Zones, November 2004) and Subchapter 7 (Nondegradation of Water Quality, June 2004).

ARM 17.30.635(4) requires that the design condition for disposal systems must be based on the 7-day average flow of the receiving water which is expected to occur on average once in 10-years (7Q10). More restrictive requirements may be necessary due to specific mixing zone requirements.

D. Mixing Zone

A mixing zone is an area where the effluent mixes with the receiving water and certain water quality standards may be exceeded [ARM 17.30.502(6)]. The Department must determine the applicability of currently granted mixing zones [ARM 17.30.505(1)]. Mixing zones allowed under a permit issued prior to April 29, 1993 will remain in effect unless there is evidence that previously allowed mixing zones will impair existing or anticipated uses [ARM 17.30.505(1)(c)].

In accordance with ARM 17.30.517(1)(b), acute water quality standards for aquatic life may not be exceeded in any portion of the mixing zone unless the Department finds that allowing minimal initial dilution will not threaten or impair existing uses. The discharge must also comply with the general prohibitions of ARM 17.30.637(1) which require that state waters, including mixing zones, must be free from substances which will:

- (a) settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines;
- (b) create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials;
- (c) produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible;
- (d) create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and
- (e) create conditions which produce undesirable aquatic life.

Although certain standards may be exceeded in the mixing zone, an effluent in its mixing zone may not block passage of aquatic organisms nor may it cause acutely toxic conditions [ARM 17.30.602(16)]. No mixing zone will be granted that will impair beneficial uses [ARM 17.30.506(1)]. Acute standards may not be exceeded in any part of the mixing zone [ARM 17.30.507(1)(b)]. Aquatic life chronic, aquatic life acute and human health standards may not be exceeded outside of the mixing zone [ARM 17.30.507(1)(a)].

A standard mixing zone may be granted for facilities which discharge less than 1 mgd or when mixing is nearly instantaneous [ARM 17.30.516(d)]. Nearly instantaneous mixing is assumed if the discharge is through an effluent diffuser, when the mean daily flow exceeds the 7-day, 10-year low flow (dilution ratio <1) or the permittee demonstrates through a Department approved study plan that the discharge is nearly instantaneous. A nearly instantaneous mixing zone may not extend downstream more than two (2) river widths. Effluent discharges which do not qualify for a standard mixing zone must apply for a source specific mixing zone in accordance with ARM 17.30.518 and must conform to the requirements of 75-5-301(4), MCA which states that mixing zones must be the smallest practicable size; have minimal effects on uses; and, have definable boundaries. ARM 17.30.515(2) states that a person applying for a mixing zone must indicate the type of mixing zone and provide sufficient detail for the Department to make a determination regarding the authorization of the mixing zone under the rules of Subchapter 5.

Best Professional Judgment was used to define the mixing zone in the existing permit because no field data was available. The mixing zone was defined as "beginning at the swimming pool outfall location downstream in Fleshman Creek/Sacagawea Lagoon approximately 3,000 feet to where "H" Street crosses Fleshman Creek/Sacagawea Lagoon". The previous permit did not specify for what parameters the mixing zone would be used. This mixing zone is inappropriate for TRC because acute standards for aquatic life for any parameter may not be exceeded in any portion of a mixing zone, unless the Department specifically finds that allowing minimal initial dilution will not threaten or impair existing beneficial uses [ARM 17.30. 507(1)(b)]. There is evidence that the previously allowed mixing zone could impair existing uses [ARM 17.30.505(1)(c)].

Tom Mason, President of the Joe Brooks Trout Unlimited Chapter in Livingston, stated that the primary focus of the Fleshman Creek Enhancement Project was to enhance Yellowstone cutthroat trout habitat. He reported that whitefish and suckers spawn in the lower pools and Chapter members have seen Brown and Rainbow trout spawning in Fleshman Creek but not Yellowstone cutthroat trout (phone conversation with Tom Mason on July 11, 2007).

ARM 17. 30.506(1) and (2) requires the Department to consider biologically important areas such as spawning areas or shallow water nursery areas and the

toxicity of the substance discharged when granting mixing zones. No mixing zone is granted for this discharge because Fleshman Creek is used as a fish spawning area and TRC is toxic to aquatic life.

E. Basis for WQBEL (Reasonable Potential and Calculations)

Pollutants typically present in swimming pool wastewater that may cause or contribute to a violation of water quality standards include TRC, turbidity and pH.

Effluent limits are required for all pollutants which demonstrate a reasonable potential to exceed numeric or narrative standards. The Department uses a mass balance equation to determine reasonable potential based on *EPA Technical Support Document for Water Quality based Toxics Control (TSD)* (EPA/505/2-90-001) Input parameters are based on receiving water concentration, maximum projected effluent concentration and design flow of the wastewater treatment facility, and the applicable receiving water flow. The Department is proposing effluent limits for certain pollutants for which adequate data exists. No data is available for Fleshman Creek immediately upstream from the facility so reasonable potential to exceed numeric standards cannot be assessed for this permit.

Flow - The discharge flow rate was limited in the existing permit to the maximum backwash flow rate of the old sand filter (143 gpm) to limit pollutants discharged during backwashing. The new Sta-Rite System 3 Modular Media Filter System does not discharge backwash water so flow will not be limited in this permit. According to the operator, the discharge flow is less than 125 gpm once each fall for two to three days (personal communication with Ed Miller, Parks Foreman on April 25, 2007).

TRC - The facility disinfects the swimming pool with chlorine. The TRC effluent limit in the existing permit is 0.35 mg/L. This limit was calculated in the existing permit by assuming complete mixing and dilution of the effluent in Fleshman Creek. This TRC limit (0.35 mg/L) exceeds the water quality standard because no mixing zone is granted in this permit. The TRC effluent limits in this permit are the water quality standards for chlorine: average daily limit of 0.011 mg/L (chronic) and 0.019 mg/L (acute) for an instantaneous maximum limit. The facility should be able to meet these limits without dechlorination because it only discharges once at the end of the swimming season and it can allow the chlorine to dissipate in the swimming pool before it is discharged to Fleshman Creek.

TRC limits apply at the end of the discharge pipe [ARM 17.30.637(1)(d)]. Analytical methods in 40 CFR Part 136 requires chlorine samples to be analyzed immediately. On-site sampling for TRC with a chlorine meter using an approved method is required. The method must achieve a minimum detection level of 0.1

mg/l. Sampling of effluent with analytical results less than 0.1 mg/l is considered in compliance with the chlorine limit.

pH - The pH effluent limit will remain the same as in the existing permit which is 6.0 - 9.0 s.u.

Turbidity - The existing permit contained a turbidity limit of 100 NTUs above the natural background turbidity in Fleshman Creek. This limit was based on assuming complete mixing of the discharge and full dilution with the receiving water. This limit exceeds the turbidity limit for B-1 waters which is 5 NTU above the naturally occurring turbidity in the receiving stream [ARM 17.30 623(2)(d)]. The turbidity limit in this permit is 5 NTUs above the turbidity value measured in Fleshman Creek and applies at the end of the discharge pipe. This turbidity limit will preserve and protect spawning gravels used by the local trout fishery. Discharge data from the last five years demonstrates the facility can achieve this limit.

IV. Final Effluent Limits

Final Effluent Limits for Outfall 001

Proposed Final Effluent Limits					
Parameter	Units	Effluent Limitations			
		Average Monthly Limit ¹	Average Weekly Limit ¹	Maximum Daily Limit ¹	Instantaneous Maximum Limit ¹
Total Residual Chlorine ²	mg/L	0.011	--	--	0.019
Turbidity ³	NTU	--	--	--	5
Footnotes:					
1. See definitions in permit.					
2. Sampling of the effluent with analytical results less than 0.1 mg/L is considered in compliance with the TRC limit.					
3. Above the turbidity value in Fleshman Creek.					

pH: Effluent pH from Outfall 001 shall remain between 6.0 and 9.0 standard units. For compliance purposes, any single analysis or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

There shall be no discharge which causes visible oil sheen in the receiving waters [ARM 17.30.637(1)(b)].

There shall be no discharge of floating solids or visible foam in other than trace amounts [ARM 17.30. 637(1)(b)]

V. Monitoring Requirements

Effluent samples must be obtained from the sample tap on the discharge pipe in the pump room and be representative of the discharged water.

A. Effluent/In-stream Monitoring

Monitoring Requirements				
Parameter	Unit	Sample Location	Sample Frequency	Sample Type ¹
pH	s.u.	Effluent	Daily	Instantaneous
Turbidity	NTU	Effluent	Daily	Instantaneous
Turbidity	NTU	Fleshman Creek ²	Daily	Instantaneous
Net Turbidity ³	NTU	Effluent Net	Daily	Calculated
Total Residual Chlorine	mg/L	Effluent	Daily	Grab
Footnotes: 1. See Definition section at end of permit for explanation of terms. 2. Fifty feet upstream from the discharge. 3. Net turbidity is calculated by subtracting the turbidity value in Fleshman Creek from the effluent turbidity value (Effluent NTU - Fleshman Creek NTU = Net turbidity).				

Upstream samples from Fleshman Creek must be taken 50 feet upstream from any influence of the discharge and small dam. The location must be clearly marked. The upstream sample must be collected within five (5) minutes of sampling the effluent discharge and both turbidity samples must be analyzed within 48 hours.

VI. Nonsignificance Determination

Turbidity and TRC effluent limits in this permit are more stringent than the previous limits. The discharge from the Livingston Swimming Pool does not constitute a new or increased source of pollutants pursuant to ARM 17.30.702(18). Therefore, the discharge is not significant.

VII. Special conditions/Compliance Schedule

There are no special conditions or compliance schedule necessary for this permit.

VIII. Other Information

On September 21, 2000, a U.S. District Judge issued an order stating that until all necessary total maximum daily loads (TMDLs) under Section 303(d) of the Clean Water Act are established for a particular water quality limited segment (WQLS), the State is not to issue any new permits or increases under the MPDES program. The order was

issued in the lawsuit Friends of the Wild Swan v. U.S. EPA, et al. (CV 97-35-M-DWM), District of Montana and Missoula Division.

The Department finds that renewal of this permit does not conflict with Judge Molloy's Order (CV 97-35-M-DVM) because it is not a new permit and the permit does not authorize an increase load or discharge of pollutants.

IX. Information Sources

40 CFR, Parts 122, 136, July 1, 2000.

ARM Title 17, Chapter 30, Subchapter 5 - Mixing Zones in Surface and Ground Water.

ARM Title 17, Chapter 30, Subchapter 6 - Surface Water Quality Standards.

ARM Title 17, Chapter 30, Subchapter 7 - Nondegradation of Water Quality.

ARM Title 17, Chapter 30, Subchapter 13 - Montana Pollutant Discharge Elimination System (MPDES) Standards.

DEQ. Circular WQB-7, Montana Numeric Water Quality Standards. January 2004.

DEQ. Montana List of Water bodies in Need of Total Maximum Daily Load Development. 1996.

DEQ. Montana 303(d) List. A Compilation of Impaired and Threatened Water bodies in Need of Water Quality Restoration. Part A. Water Quality Assessment Results. 2006.

EPA. Office of Water, U.S. EPA NPDES Permit Writers' Manual, EPA-833-B-96-003. December 1996.

Livingston, City of. Sacajawea Lagoon Related Information received from the City. April 24, 2007.

Prepared by: John Wadhams

Date: July 2007

Figure 1

